NAVAIR Aircraft Platform Interface Laboratory

Modeling and Simulation

A novel approach to the use of state-of-the-art modeling and simulation (M&S) hardware and software facilitates concept analyses, requirement generation, and system design for advanced systems.

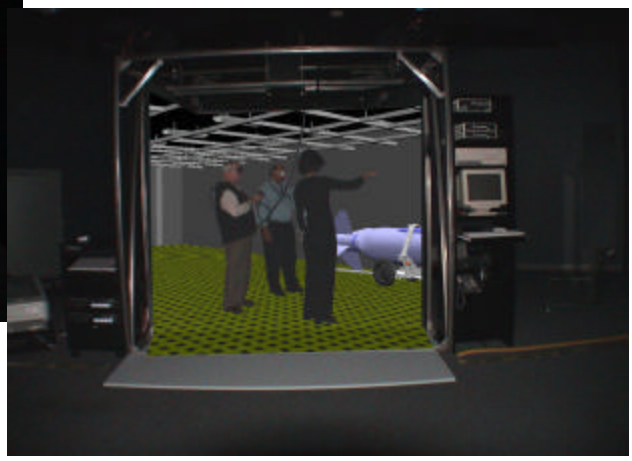
The M&S Laboratory at NAVAIR Lakehurst uses powerful computer and visualization hardware and software to ensure customer confidence in proposed products before actual development begins. The design and functionality of the system can be reviewed before the product is solidified, which reduces the overall design and development costs; shortens scheduled product developments; and increases the likelihood that the product will operate as expected in its final intended environment.

Two advanced visualization systems immerse users in a virtual environment that gives a three-dimensional understanding of how a proposed product will behave in its intended setting. The first system is the Visualization Center (VisCenter) from Panaram. The VisCenter is a 6-foot-high by 19-foot-wide cylindrical screen that provides three-dimensional visualization, and allows up to ten individuals to simultaneously view a scene and make decisions on how the proposed product should behave when installed. The second system is the CAVE from Fakespace. This is an 8-foot cube that allows up to five individuals to walk into a virtual environment. The CAVE allows the individuals to view the environment from three sides as well as the floor and to virtually "walk-through" spaces while interacting with the environment. Both of these systems are powered by an Onyx 3200 from Silicon Graphics. The Onyx consists of eight CPUs, two graphic pipes, three raster managers, and 4 GB of RAM to drive the VisCenter and CAVE.

These resources in the M&S laboratory are also connected to the Defense Research and Engineering Network (DREN), a high-speed wide area network (WAN) that enables over 5,200 scientists and engineers at defense laboratories, test centers, universities, and industrial sites to share high performance computing resources. DREN also allows engineers and analysts at NAVAIR Lakehurst to execute simulations across DoD and industry sites.

In the VisCenter up to 15 individuals can experience three-dimensional visualization.

The CAVE allows up to six individuals to be immersed in a virtual environment.



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Partnering Opportunities

Several mechanisms exist for partnering with NAVAIR Lakehurst. These include cooperative research and development agreements (CRADAs), commercial services agreements (CSAs), and education partnership agreements (EPAs). Under a CRADA, Lakehurst engineers and scientists work cooperatively with their peers in industry or academia on mutually beneficial research and development. The Navy has been given statutory authorization, via CSAs, to use Navy facilities to perform specific types of work for private parties. EPAs allow collaboration between NAVAIR Lakehurst and educational institutions.

Potential Applications

The M&S tools resident in this API laboratory can be used to analyze and design systems for a wide range of DoD and commercial applications. Some potential applications include:

- Analyzing how automated systems could assist an Army soldier in battle
- Analyzing how a new robotic system could maneuver in an existing automobile assembly plant
- Analyzing how a new tower at an airport should be designed to allow for maximum view of the runways and operator workstations
- Analyzing how re-arranging a drug production line could increase productivity
- Analyzing how a hospital emergency room should be arranged to maximize the number of patients that may be treated simultaneously

For More Information

Technical point of contact:
732-323-4877

NAVAIR Lakehurst's Aircraft Platform Interface Facility was opened in August 2002. This 66,000-square-foot research and development facility supports the Navy's aircraft launch and recovery and support equipment missions. The technical capabilities covered by the 14 laboratories in this facility include power control systems; modeling, simulation, and data analysis/management; optical and lighting systems; integrated diagnostics; component evaluation; and applied technology. The synergism provided by collocating these teams of engineers, scientists, and technicians in one building further enhances this state-of-the-art facility. Other particulars call 732-323-7043.

NAVAIR Lakehurst researches, develops, tests, and procures aircraft launch and recovery systems and support equipment for Navy and Marine Corps aviation.